

PRECIPITATION

Precipitation is defined as water in liquid or solid form falling on the earth's surface.

Types of precipitation and its characteristics

It is classified into three types viz., Conventional precipitation, Orographic precipitation, Frontal precipitation.

1. Conventional precipitation: It is formed when air on the surface of the earth and few metres above it is heated by the sun. As the air is heated, it becomes lighter (water vapor). The lighter air rises, cools down, and then condenses on the condensation nuclei in the atmosphere. Conventional precipitation results in heavy showery rainfall. The major forms of precipitation associated with this type are rains or snow showers, hail or snow pellets. Convention is upward movement of relatively warm air.

2. Orographic precipitation: Precipitation resulting from raising and cooling of air masses when they are blocked by a topographical barrier (mountains). The barriers are important factor in increasing the rainfall on windward slopes. Here the mountain barriers lie across the paths of moisture bearing winds.

3. Frontal precipitation: It is produced when air currents converge and rise. Most precipitation results from condensation and sublimation. This type occurs mainly in middle latitude.

Hydrological cycle:

It consists of three major steps viz., Evaporation, condensation and precipitation.

1. Evaporation: The primary source of water vapour in the atmosphere is the moisture evaporated from the Ocean (99%), lands and a small extent from transpiration.

2. Condensation: Warm air rises and water vapour is condensed.

3. Precipitation: The condensed water vapour floats through the air in the form of clouds through the barrier of adiabatic cooling. Extensive air masses fall below the dew point. Water particles increase in size until they are too heavy to float and then they fall as rain or snow or other forms of precipitation.

Forms of precipitation

1. Rainfall: This is one kind of precipitation received through the hydrological cycle. It is a never-ending cycle between Ocean, atmosphere and land. A day, receiving a rainfall of 2.5 mm or more is called a rainy day.

2. Drizzle: Minute droplets of water having a diameter less than half a millimeter or 0.02 inches. The intensity is very light and the fine droplets of water hardly reach the ground. It falls continuously from low stratus type of clouds.

3. Snow: It is formed by crystallization of water vapour at temperature below freezing point through the process of sublimation. A snow cover is a poor conductor and keeps the soil temperature higher. Much useful in agriculture in regions where the winters are severe. It prevents soil freezing and protects roots of the plant.

4. Hail of Hailstorm: Hail is composed of hard pellets of ice or ice and snow. It ranges from small peas to large cricket ball size. Hails rarely occur in tropic or high latitude. It causes heavy damage to crops, buildings and to glass houses.

5. Sleet: It is the precipitation in the form of small particles or pellets of clear ice. Sleet are formed either due to melting of hail or due to freezing of raindrops when it passes through the cold air mass. Sleet occurs when there is a strong temperature inversion above the surface.

6. Glaze: When the rain is composed of super cooled drops, which froze rapidly upon striking solid surface. This forms a coating of ice on trees, wire and other objects. Such deposits are called glaze. This damages the trees and wires by breaking due to over weight. Some times deposits of >5cm thickness has been observed on tree twigs.

Forms of Condensation:

1. Dew:

It is condensed moisture deposited on cold objects. It has two roles.

a) Passive role- It delays rise in temperature

b) Active role- Dew is absorbed by the plants and enters in dynamic liquid cycle.

It is much useful in arid region for crops.

2. Frost:

When the dew point is below 0°C, moisture passes directly from gaseous to solid state.

3. Fog: It may be defined as microscope falling of small drop of water condensed and suspended in the air at the surface of earth reducing horizontal visibility. The blend of smoke and fog is called smog.